LETTERS TO THE EDITOR.

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Scottish "Elephant" Designs.

PROF. G. ELLIOT SMITH has referred in NATURE of January 27 to the "conventionalised drawings of the elephant in . . . Scotland," and has been helped by these designs in his building up of an important theory. But, alas! these Scottish drawings are not of elephants.

I have gone most carefully into every known specimen, whole or fragmentary, of these so-called "elephants," for the purpose of attempting an elucidation and reading of the corpus of Pictish symbolism. They are invariably accompanied by other Pictish symbols. From consideration of their positions in series, their varying dimensions, the angles at which they lie, and other factors, I believe I have been able to arrive at a correct solution of the problem of their meaning. I am sure that they never had anything to do with elephants. But whether my solution is right or not, I merely here desire to point out that a close study of the drawings reveals that the supposed trunk consists of two elongated jaws. The other parts of the anatomy are likewise quite non-elephantine in character.

The fancied resemblance of these very early Christian sculpturings to elephant figures was first promulgated some forty years ago by a writer familiar with Indian mythology, who attempted to connect up Scottish with Indian inscriptions and designs. The attempt, however, was speedily abandoned.

LUDOVIC MACLELLAN MANN.

Royal Societies Club, February 1.

MR. MANN's letter serves as a reminder that the discussion of the significance of the Scotch pictures of the elephant has followed a course remarkably analogous to that which has been waged for a century around the American representations of the elephant.

In both cases all the early scholars, as well as those of our contemporaries who do not claim to have a special ethnological insight, are satisfied to regard them as pictures of elephants; but the ingenuity of modern pundits insists on interpreting these sculptures in some more recondite way. In America the ethnologists are not sure whether the creature depicted was a tapir, a tortoise, or a macaw. In Scotland and Scandinavia the dispute around the elephant is maintained by scholars who are wrangling as to whether it is a walrus, a sun-bear, or a lion-rampant! (For the literature the reader should consult Haddon's "Evolution in Art," p. 194; the Earl of Southesk's "Origin of Pictish Symbolism," 1893; and Hildebrand's "Industrial Arts of Scandinavia," 1882.) Your correspondent tells us he has "been able to arrive at a correct solution of the problem," but with singular modesty he declines to tell us what it is.

In 1856 and 1867 the Spalding Club published two magnificent volumes dealing with "The Sculptured Stones of Scotland," in which the learned editor, Mr. John Stuart, brought his wide knowledge and common sense to bear upon the problems raised by the pictures of the elephant, and, I believe, settled the question for all time. He had no doubt whatever that the animal depicted was the Indian elephant, the knowledge of which "was brought into Europe by the Greeks after the Indian expeditions of Alexander the Great" (vol. ii., pp. xi. and xii.).

"The elephant of the Scotch stones cannot be regarded as a likeness but rather as a conventional representation of the animal, and the unvarying adherence to one form would suggest that the sculptors were unacquainted with the original and were not working from a traditional description . . . but rather were copying a figure with defined form" (p. xii). He adds further that the ornamental scrolls found on the elephant were not found on any other beast. These scrolls were derived from the Indian sea-elephant type of "makara."

Mr. Mann's remark that "the fancied resemblance of these . . . sculpturings to elephant figures was first promulgated some forty years ago by a writer familiar with Indian mythology," presumably refers to Col. Forbes Leslie, who, on the first page of his book on "The Early Races of Scotland," states that Mr. John Stuart's work "has been taken as the basis of the present work."

I presume, therefore, that Mr. Mann is not acquainted with the real evidence upon which my case is established.

There is, of course, a very considerable mass of other literature relating to these elephants, both serious argument and modern speculation; but the only other item that I need refer to now is an episode in one of the Norse fairy tales, as translated by Sir George Dasent, of "an old hag drawing water out of a well with her nose, so long was it."

One might make the same remark about this story as Mr. (now Sir) Edward Tylor made in reference to the American legend of the "great elk," told by Father Charleroix ("History of New France," 1744, vol. v., p. 187): "it is hard to imagine that anything but the actual sight of a live elephant could have given rise to this tradition" ("Early History of Mankind").

G. ELLIOT SMITH.

The University of Manchester, February 3.

The Remarkable Warmth of January, 1916.

A COMPARISON of the Greenwich temperatures for January, 1916, with past records may be of some interest.

Record temperatures for the time of year have occurred with considerable frequency this winter, and the warmth of January was unique in many respects. The maximum and minimum temperature observations taken at the Greenwich Observatory are used for the examination of the exceptional character of the month, and the Greenwich records afford trustworthy means of comparison extending over a long period.

The average temperature for January obtained from the maximum and minimum observations for the last seventy-five years is 38·5°, and the mean for January this year was 45·7°, which is 7·2° higher than the average, and it is 2·0° higher than in any January since 1841, the previous highest mean being 43·7° in 1846, which is followed by 43·5° in 1884. There have only been six previous Januarys in the last seventy-five years with the mean temperature as high as 43°. The mean of January, 1916, was 1·5° warmer than December, and 6·5° warmer than November last, whilst the month was warmer than in five Aprils during the last thirty years.

The mean maximum or highest day temperature for the month was 50·6°, which is 7·5° warmer than the average, and is 2·1° above the previous highest mean maximum, 48·5° in 1890, and there have only been four previous Januarys with the mean maximum temperature as high as 48°.

The mean minimum, or night temperature, was 40·8°, which is 7·0° above the seventy-five years' aver-

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age, and is 1·4° higher than the previous highest mean minimum, 39·4° in 1846, whilst there have only been three previous Januarys with the mean minimum as high as 39°. The mean minimum of 40·8° is in agreement with the average minimum at the beginning of May or end of October.

The lowest mean temperature for January during the last seventy-five years is 31·6° in 1879, and 31·8° in 1881, which, with January this year, gives a range of 14° for the possible mean temperature.

In January, 1916, there were three frosty nights at Greenwich, the lowest temperature being 29° on January 23, and in the last seventy-five years January, 1884, had only one frost, and January, 1872, had two frosts, whilst the other Januarys during the long period with as few as three frosty nights were 1851, 1853, 1875, and 1890. In twelve Januarys there have been as many as twenty or more frosts, and in 1879 there were twenty-six frosts. There has been no January with more than seventeen frosty nights since the memorable frost of 1895.

There were twenty days at Greenwich with the temperature 50° or above, and the nearest approach to this in previous Januarys since 1841 is seventeen days as warm as 50° in 1890, whilst there is only one other instance, in 1899, with as many as fifteen days as warm.

The highest temperature recorded at any time in January during the seventy-five years is 57° on January 28, 1843, and this temperature was reached both on January 1 and 17 this year. The two closing days of the month were the only occasions on which the maximum or highest day temperature was below the normal; the lowest maximum temperature was 42° on January 31.

There have only been two Decembers in the last seventy-five years with a higher mean than in January, 1916, the instances being 47·2° in 1852, and 45·8° in 1868, and in December, 1912, the mean was 45·7°, identical with last January. The only February with so high a mean was in 1869, the value being 45·8°.

Previous observations to those of the new series from 1841 made at Greenwich show a mean temperature of 44·6° in January, 1834, which is the highest during the last 100 years, and 1·1° lower than January, 1916.

Chas. Harding.

65 Holmewood Gardens, Brixton Hill.

Lipoids and Vitamines in Margarine and Butter.

In the issue of Nature of June 3, 1915, there is an interesting discussion on the presence of "vitamines" in butter and in margarine. The writer of the article on "Modern Substitutes for Butter" states that butter fat is the only fat or oil in which American investigators have shown the presence of vitamines, and he further states that vitamines are closely associated with lipoids, and that it is doubtful whether vitamines could be formed during lactic fermentation.

"S. H. B.," stating as a fact that vitamines are formed by lactic fermentation, concludes that butter and margarine, by being both churned with skim milk, should be equally rich in the precious substances mentioned.

Now there is no evidence about the quantities of vitamines in butter and in margarine. But recent investigations of my own throw some light on the quantities of lipoids in those substances, and with those lipoids the vitamines are closely allied. To find the lipoid content, I proceed as follows:—The liquid fats, oils, butter, and margarine are shaken with an equal volume of hydrochloric acid (sp. gr. 1·19). After the separation of both liquids, part of the acid is let off and diluted with water. The precipitate of lipoids is collected and washed with water, dried, and weighed. I found in 100 c.c. of liquid:—

Butter gr.	Margarine gr.	Sesame oil gr.
0·400	0·975	0·100
Planta (Vegetable butter) gr.	Klappa (Vegetable butter) gr.	Bran-butter (Vegetable butter) gr.
0·475	0·750	1·125
Butter-fat (Filtrated)	Olive oil (Sublime ooo)	Arachis oil (Cold pressed)
traces	traces	traces
Coconut oil (Raffinated)	Cod liver oil (Cold pressed)	
traces	traces	

The first conclusion from these figures is that the seat of the lipoids in butter and butter substitutes is not the fat, but the solution with which it is mixed and emulsified.

Further, it is obvious that of the ±0·075 per cent. of lecithin in milk only a part is enclosed in the butter. The remaining lipoids in the skim milk are responsible for the greater part of the lipoid content in margarine. Egg yolk, if added, may prove another source of lipoids in margarine. The high figure for margarine as compared with those for "vegetable butter" may be due to that source.

There is another store of lipoids in the seeds of plants, which is turned to profit in a recent Dutch patent process. There was a serious obstacle in the fact that lecithin enters into chemical combination (Hoppe Seyler, Juckenack), or absorption (Rob. Cohn), with albumins.[1] In order to set it free the seeds are treated with diluted acids or alkalis. "Bran-butter," *e.g.*, is made by treating bran with diluted lime water. The solution thus obtained consists of water, glutelin, lipoids, and salts. With it a mixture of arachis oil and raffinated coconut oil is thoroughly emulsified. To this emulsion is added skim milk, and the butter separated after ripening. Working on these lines a vegetable butter with 1·125 gr. of lipoids in 100 c.c. could easily be obtained. By changing the proportions a higher content may be reached if desired.

It is obvious that a "vegetable butter" of this kind in its lipoid content, and probably also in its vitamine content, is more than equal to butter. As a fact, it has a most marked advantage as a part of the daily diet.

Anyone interested in the process above mentioned and its possibilities as to making butter-like, and even cheese-like products, is invited to correspond with the writer.

J. de Ruiter.

Sneek, Holland.

Science Scholarships.

The leading article in Nature of February 17 (p. 671) quotes Dr. Shipley and Mr. Roberts, who say, in reference to the candidates for science scholarships at Cambridge:—"No candidate in natural science who reaches the necessary standard of ability is likely to be rejected. But the supply of candidates of sufficient ability is not so great as it should be."

I have not had the opportunity of reading the original letter, but this quotation contains two points on which I may be permitted to make a few remarks. I feel entitled to ask this privilege as between 1890 and 1904 I took a share in the work of scholarship examination, and I am now able to review my work in the light of a more general experience.

First, as to the type and standard of the questions that are set to the candidates, these appear now to

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[1] The absorption of lipoids by albumins could be observed by heating sesame oil with bran to 100° C., by which the oil is proved to have lost half its lipoid content.

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